Remarks

Favorable consideration and allowance are respectfully requested for claims 1-29 in view of the following remarks.

In the Office Action dated June 13, 2003, Figures 1 and 4 were objected to. Claims 1-29 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,246,369 to Brown *et al.* (the "Brown patent").

Objection to the Drawings

In response to the objection to the drawings, replacement drawing sheets 1 and 2 are submitted herewith. Per the Examiner's instructions, elements 11-13 in Figures 1 and 4 have been labeled.

Rejection under 35 U.S.C. § 102(e)

According to the Examiner, the Brown patent teaches the claimed array antenna system, method, and structure, including a first antenna subarray (Figure 2), a second antenna subarray (Figure 2), a combination line network (Figure 3), a phase-shifting device 44 for generating a phase displacement between the first and second output signals before they are fed to the antenna subarrays, and an apparatus 22 for compensating for the phase displacement in the beam path of the antenna radiation emitted by the first and second antenna arrays.

Applicant respectfully submits, however, that the Brown patent does not anticipate the claimed invention. The Brown patent recites a phased-array antenna 10 having a substrate 12 on which antenna elements 16 reside as well as a superstrate 22 placed over the antenna elements 16. The characteristics of the superstrate allow the physical spacing between the antenna elements to be

reduced. *See, e.g.*, Brown patent, col. 3, lines 62-67. In addition, each antenna element is connected with a phase shifter to control beam steering. *See* Brown patent, col. 4, line 60 to col. 5, line 12.

Thus, the Brown patent is directed to providing a phased-array antenna system that is reduced in size. In contrast to the present invention, the Brown patent is not related to the problem of providing a phased-array antenna system that, with respect to the bandwidth, has a low-input reflection factor and thus a greater matching bandwidth.

In the present invention, the arrangement of the phase-shifting device and the apparatus for compensating for the phase displacement performed by the phase-shifting device does not generate a spatial deflection of the antenna beam. With the phase-shifting device, a phase displacement of 90° between the two output signals of the combination transmission line network is generated before the output signals are fed to the antenna subarrays. The phase-shifting device achieves a phase displacement of 180° between the waves reflected on the antenna subarrays at the combination transmission line network. This results in an absorption of the reflected waves from the two subarrays at the fourth port of the four-port power splitter. With this absorption, the resulting reflection factor at the antenna input may virtually disappear.

The phase displacement of 90° in the beam path of the antenna radiation emitted by the two antenna subarrays is compensated for by means of the inventive apparatus, whereby the apparatus generates a phase displacement of (-90°). Thus, with the apparatus provided to the antenna subarrays, the phase displacement in the beam path of the antenna radiation emitted by the antenna

subarrays is compensated so that the antenna radiation of the array antenna system has the phase position of the originally provided signal.

In addition, in the present invention, no refraction is generated to achieve a reduction in size of the antenna system.

For the foregoing reasons, Applicant asserts that the Brown patent does not anticipate the pending claims and, therefore, respectfully requests that the rejection of claims 1-29 in light of the Brown patent be withdrawn.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 56226.50819).

Respectfully submitted,

September 12, 2003

Reg. No. 44,420

Gary R. Edwards
Registration No. 31,824
Michael H. Jacobs
Registration No. 41,870

CROWELL & MORING LLP
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844

REPLACEMENT SHEET

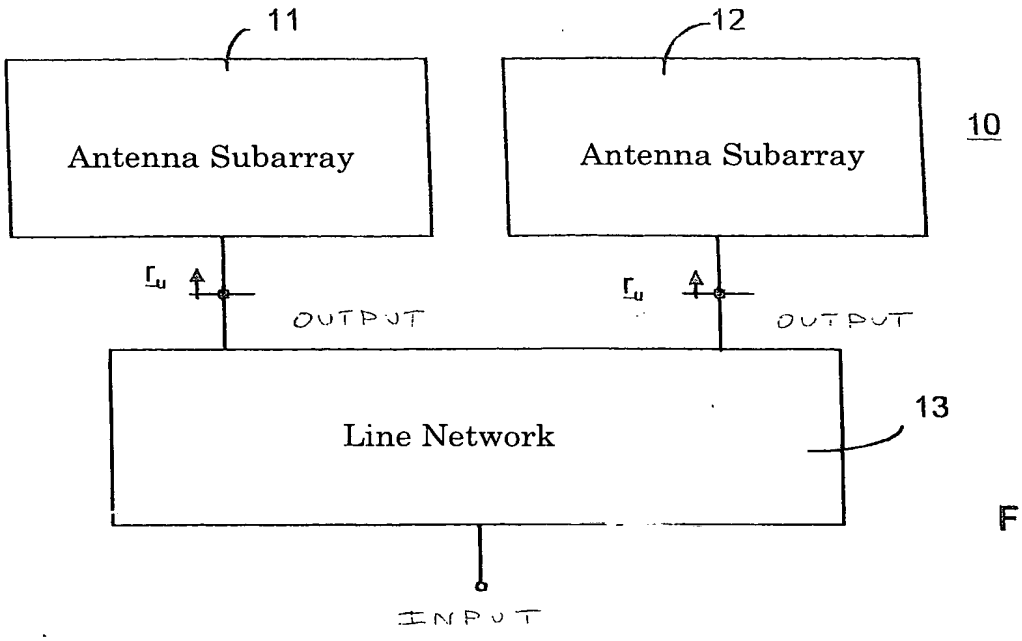


Fig.1

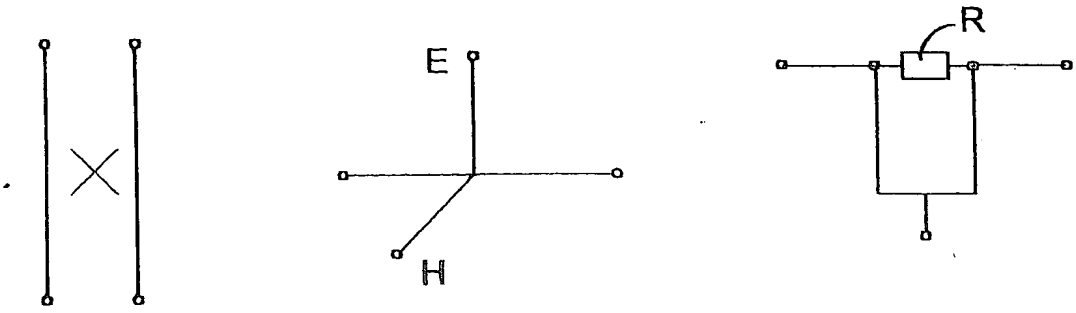


Fig.2

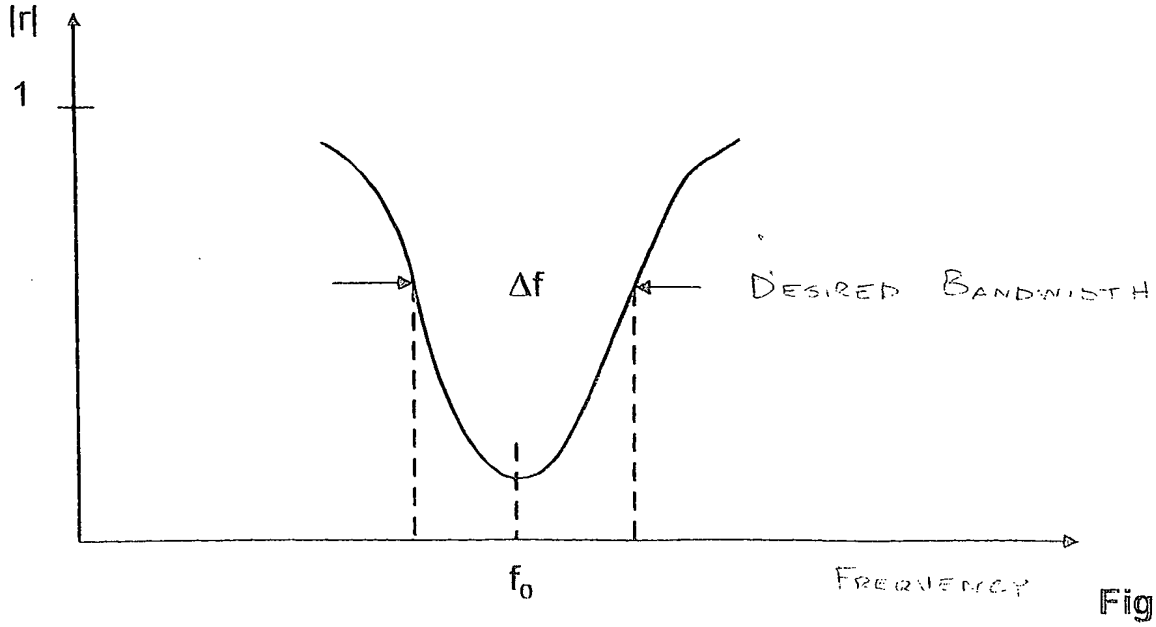


Fig.3

OK - MB

REPLACEMENT SHEET

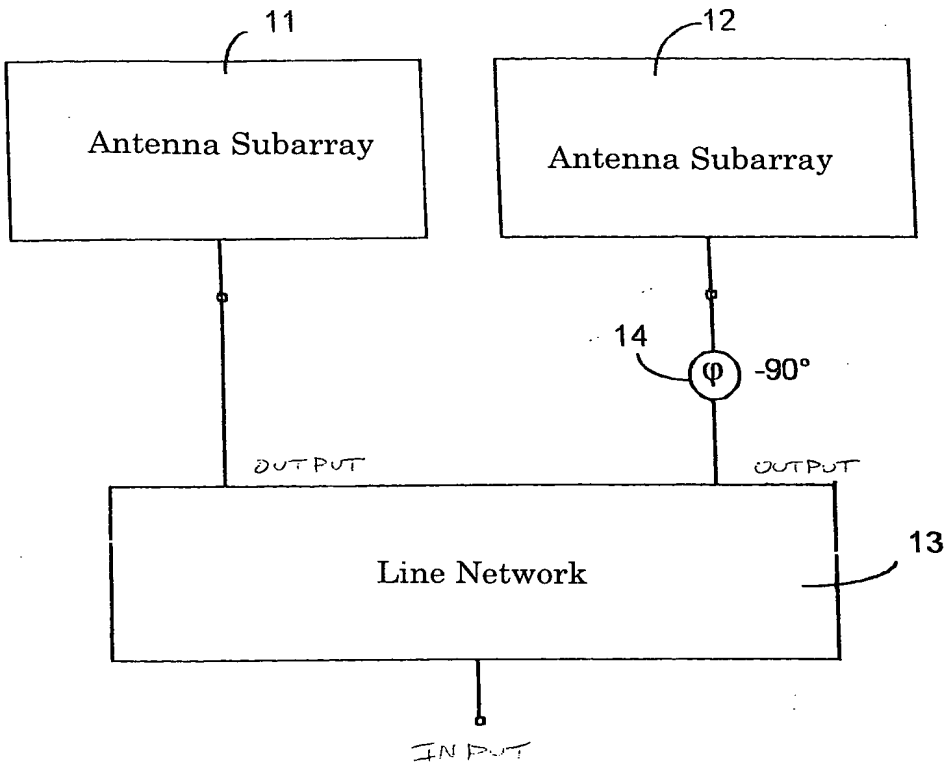
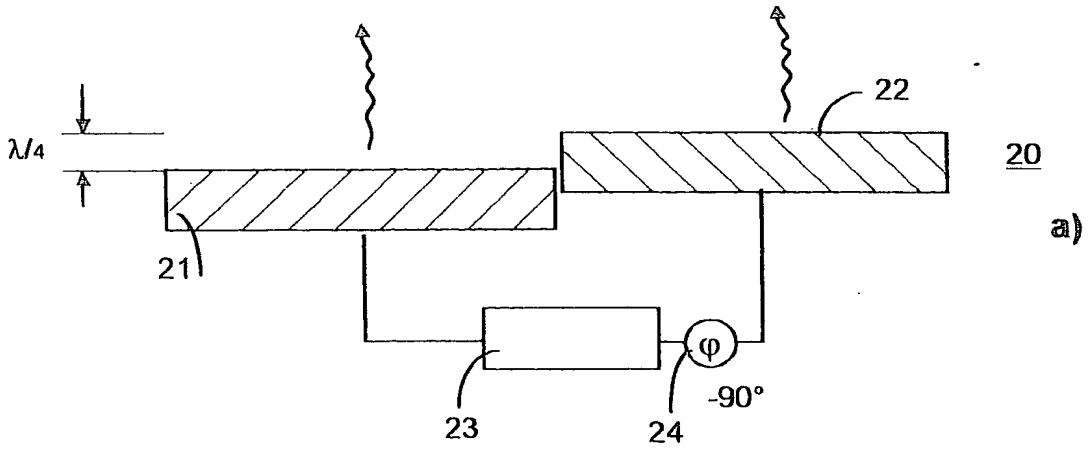


Fig.4



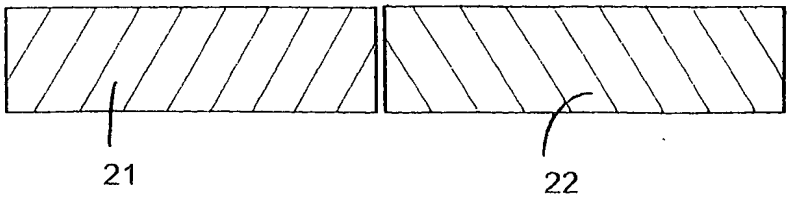


Fig.5

OK – Ink